Allanblackia stuhlmannii Engl.

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Allanblackia stuhlmannii Engl.

Taxonomy and nomenclature

Family: Clusiaceae (formerly Guttiferae).
Vernacular common names: Musambu, (Shambaa), Mkange, mkanye, mkimbo, mshambo, mwaka (Sw).

Distribution and habitat

Allanblackia stuhlmannii is endemic to Tanzania, where it occurs in the Eastern Arc Mountains, extending from Tanga (North-East highlands) through to Iringa Region (Southern Highlands). It occurs on eastern (seaward, humid) slopes and valley bottoms of evergreen submontane and montane forest at 800–1200 (–1600) m altitude. Largest natural population is in the Eastern Usambara Mountains. Average annual rainfall in its habitat is 1100–2400 mm with more than 180 rainy days. The mean annual temperature is ~18°C, maximum temperatures ~25°C to 35°C; minima are occasionally as low as 3°C. It is found on mostly acidic clay soils derived from granite, gneiss or siliceous rock. The small isolated forest patches in the Udzungwa Mountains are drier than the rest of the habitat. *Allanblackia stuhlmannii* trees are fire-tolerant.

Uses

The seed yields an edible fat called 'allanblackia fat' or 'kanye butter'. It is used in cooking and has been used as a substitute for butter and cocoa butter, and to make candles. Air-dried seeds contain about 50 % fat. The fatty acid composition of the fat is remarkable as it consists mainly of stearic acid (45–58 %) and oleic acid (40–51 %). Only traces of other fatty acids are present. Its composition and resulting high melting point (34°C) makes the fat a valuable raw material that can be used without transformation to improve the consistency of margarines, cocoa butter substitutes and similar products.

The wood consists mainly of sapwood with only a small heartwood core. The wood is used for construction (poles), cheap joinery, boxes, crates, beehives and water containers. It is termite resistent. In traditional medicine the leaves are chewed to treat coughs, while the leaves, bark and roots are used to treat impotence. A seed extract is rubbed in to treat rheumatism. The fat is applied as a liniment on aching joints, wounds and rashes and small quantities are taken to treat rheumatism.

Female (left) and male (right) flower

Botanical description

Evergreen, dioecious, medium-sized to fairly large tree up to 35(–45) m tall; bole straight, cylindrical, slightly buttressed; bark surface smooth or rarely flaking with square scales, dark grey to black, inner bark red to pale brown with white stripes, fibrous to granular, exuding a clear sap later turning yellowish; branches drooping, hollow, longitudinally wrinkled. Leaves opposite, simple and entire; petiole 1–2 cm long; blade oblong to elliptical-oblong, 5–20 cm × 1–7 cm, base cuneate, apex shortly acuminate, leathery, dark green, pinnately veined with numerous lateral veins. Flowers solitary in leaf axils or crowded at the end of branches, unisexual, regular, 5-merous, cream to reddish, fragrant; pedicel (3.5–) 6.5–8 cm long; sepals orbicular to ovate, unequal, outer ones 4–9 mm in diameter, inner ones c. 2 cm in diameter, pale yellow; petals orbicular to spatulate; male flowers with numerous stamens grouped in 5 thick, fleshy bundles opposite the petals, c. 2 cm long, inner surface angled, anthers arranged on the two faces of the bundles; disk star-shaped; female flowers with superior, 5-celled ovary with persistent, woody sessile stigma,

Fruit and Seed description

Fruit: Fruit a large oblong to globose or cone-shaped berry 16–34 cm × 15–17 cm, weighing 2.5–6 kg, red-brown, 40–140 seeded.

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Seed: Seeds 4-angular, c. 4 cm × 2–3 cm, one angle with a small fleshy aril; embryo small, embedded in oily endosperm. There are about 30-100 seeds per kg.

Flowering and fruiting habit

Flowers are unisexual and trees are dioecious. Trees start flowering when about 30 – 40 cm in diameter and 10-18 m tall, which may correspond to about 12-20 years old. Male flowering occurs more typically in smaller (younger) trees than female flowering. Main flowering period is during the short dry season from December–March and a second mini flowering period from September - October. Flowering period may vary according to actual weather conditions; i.e. during the dryer years flowering comes earlier. Fruits take about one year to develop; fruit maturity coincides with flowering period. A mature tree may yield up to 300 fruits per year. Rodents and bushpigs feed on the fruits and may disperse the seeds.

Harvest

Matured fruits are collected from the ground after natural fall. Collection from the tree is generally not applicable because maturity of fruits on the tree cannot be assessed.

Processing and handling

Well-matured fruits are kept for about 2 weeks to allow the pulp to become soft and to make extraction of the seed easy. Seeds are extracted by washing away pulp and outer testa in water.

Storage and viability

Seeds are desiccation sensitive but may be stored for several months in hydrated conditions either enclosed in the fruits or extracted and stored moist in plastic bags or moist sawdust. Note: Seeds to be stored should not be washed but stored together with the fruit pulp. Washing tends to harden the seed coat and delay germination.

Dormancy and pretreatment

Seed coat is hard and ostensibly impedes imbibition. Manual removal of the seed coat with a knife promotes germination. Washing seed promotes germination, if seeds are sown directly after washing.

Sowing and germination

Germination is hypogeal. Seeds develop an accessory root, which apparently serves as a physical support root. Germination is generally slow and may typically take 1-7 months to start and germination may not be completed until 36 months after sowing. Mychorrhiza is necessary for successful development and is normally applied as forest soil in the nursery.

Vegetative propagation

Vegetative propagation is possible by cuttings, marcotting and grafting. Cuttings with trimmed leaves are placed a few centimeters deep in soil in polythene tubes with at least one node above the substrate. Cuttings strike root in 8–12 weeks, after which sprouted and rooted cuttings are transferred to polybags. Methods of layering and budding are being developed.

Selected readings

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www.worldagroforestry.org/projects/allanblackia/.

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